



B/Ifm

PATENT
ATTORNEY DOCKET NO. 040808-5108

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	Confirmation No.: 4822
Hiroyuki ABE et al.)	
)	Group Art Unit: 2877
Application No.: 09/819,977)	
)	Examiner: P. Connolly
Filed: March 29, 2001)	
)	
For: PROCESS END POINT DETECTION APPARATUS))	
AND METHOD, POLISHING APPARATUS, SEMI-))	
CONDUCTOR DEVICE MANUFACTURING))	
METHOD, AND RECORDING MEDIUM WITH))	
SIGNAL PROCESSING PROGRAM))	

MAIL STOP AMENDMENT

Commissioner of Patents
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REQUEST FOR RECONSIDERATION OF NON-ENTERED IDS

UNDER 37 C.F.R. § 1.97(d) TRANSMITTAL FORM

1. Transmitted herewith is an Request for Reconsideration of Non-entered IDS under 37 C.F.R. § 1.97(d) in response to Office Action dated January 21, 2005.
2. Additional papers enclosed:
 - ☒ Copy of IDS filed on October 8, 2004 under 37 C.F.R. § 1.97 (c)
 - ☒ Copy of Supplemental IDS filed on November 8, 2004 under 37 C.F.R. § 1.97 (d)
 - ☒ Copy of Request for Return Copy of PTO-1449
 - ☒ Copy of Issue Fee Transmittal PTOL-85B
 - ☒ Copies of Date-Stamped Return Postcards dated October 8, 2004, November 8, 2004, and December 10, 2004
 - ☒ Copy of PTO-1449 filed on October 8, 2004 and November 8, 2004, and Korean reference cited thereon

3. Fee Calculation (37 C.F.R. §1.16)

CLAIMS AS AMENDED						
	Claims Remaining After Amendment		Highest No. Previously Paid	Present Extra	at Rate of	Total Fees
Total Claims (37 C.F.R. §1.16(c))	24	minus	24	0	x \$50 each=	+ \$ -0-
Independent Claims (37 C.F.R. §1.16(b))	5	minus	5	0	x \$200 each=	+ \$ -0-
[] First presentation of Multiple dependent claim(s)					\$360.00	+ \$
SUB-TOTAL =						\$ -0-
Reduction by ½ for filing by a small entity						- \$
TOTAL FEE =						\$ -0-

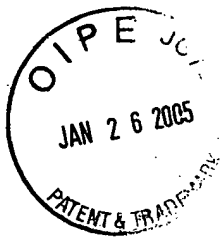
6. Fee Payment

- ☒ No fee is to be paid at this time.
- ☐ The Commissioner is hereby authorized to charge to Deposit Account No. 50-0310.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLPBy: David B. Hardy
Reg. No. 47,362Dated: January 26, 2005**CUSTOMER NO. 09629**

MORGAN, LEWIS & BOCKIUS LLP
 1111 Pennsylvania Avenue, N.W.
 Washington, D.C. 20004
 Telephone: (202) 739-3000
 Facsimile: (202) 739-3001



PATENT
ATTORNEY DOCKET NO. 040808-5108

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	
Hiroyuki ABE, <i>et al.</i>)	Confirmation No: 4822
)	
Application No.: 09/819,977)	Group Art Unit: 2877
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Filed: March 29, 2001)	Examiner: P. Connolly
)	
For: PROCESS END POINT DETECTION)	
APPARATUS AND METHOD, POLISHING)	
APPARATUS, SEMICONDUCTOR DEVICE)	
MANUFACTURING METHOD, AND)	
RECORDING MEDIUM WITH SIGNAL)	
PROCESSING PROGRAM)	

MAIL STOP AMENDMENT
Commissioner of Patents
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REQUEST FOR RECONSIDERATION OF NON-ENTERED

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(d)

An Information Disclosure Statement under 37 C.F.R. § 1.97 (c) was originally filed by Applicants on October 8, 2004. Thereafter, Applicants became aware that the Notice of Allowance was issued on October 7, 2004. Subsequently, Applicants filed the Supplemental IDS under 37 C.F.R. § 1.97 (d) on November 8, 2004 to comply with the requirements specified in 37 C.F.R. §§ 1.97 (d) and 1.97 (e)(1), requesting the Examiner to consider the originally filed IDS filed on October 8, 2004 under 37 C.F.R. § 1.97(d).

On January 21, 2005, an Office Communication was issued denying the entry of IDS filed on October 8, 2004 alleging that "the information disclosure statement filed October 8, 2004 fails to comply with 37 C.F.R. § 1.97(d) because it lacks a statement as specified in 37 C.F.R. § 1.97 (e). As evidenced by the copy of Supplemental IDS filed on November 8, 2004, Applicants respectfully submit that the requirements as specified in 37 C.F.R. §§ 1.97(d) and 1.97 (e)(1) are clearly included to conform with the practice under USPTO. In addition, Applicants respectfully submit copies of return postcards dated October 8, 2004 and November 8, 2004 confirming receipt by the USPTO of the original IDS filed on October 8, 2004 under 37 C.F.R. § 1.97(c) and the Supplemental IDS filed on November 8, 2004 under 37 C.F.R. § 1.97(d). Furthermore, as evidenced by the enclosed copy of the return postcard dated December 10, 2004, Applicants respectfully submit that both the original IDS and the Supplemental IDS were filed before payment of the Issue Fee. Accordingly, Applicants respectfully request reconsideration of the IDS filed on October 8, 2004.

Upon reviewing this Request for Reconsideration, the IDS filed on October 8, 2004, and the Supplemental IDS filed on November 8, 2004 are not satisfactory to the Examiner, Applicants respectfully request the Examiner to immediately contact Applicants' under signed representative to provide an explanation as to why the originally filed IDS and the Supplemental IDS do not meet the requirement of 37 C.F.R. §§ 1.97(d) and 1.97 (e)(1).

CONCLUSION

In view of the foregoing remarks, Applicants respectfully request reconsideration of the IDS filed on October 8, 2004. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLP

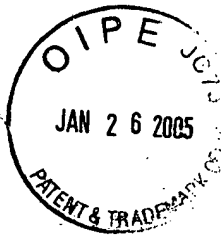
By: _____



David B. Hardy
Reg. No. 47,362

Dated: January 26, 2005

CUSTOMER NO. 009629
MORGAN, LEWIS & BOCKIUS LLP
1111 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
Tel: 202.739.3000
Fax: 202.739.3001



PATENT
ATTORNEY DOCKET NO. 040808-5108

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	Confirmation No.: 4822
Hiroyuki ABE, <i>et al.</i>)	
)	Group Art Unit: 2877
Application No.: 09/819,977)	
)	Examiner: P. Connolly
Filed: March 29, 2001)	
)	
For:		PROCESS END POINT DETECTION APPARATUS AND METHOD, POLISHING APPARATUS; SEMICONDUCTOR DEVICE MANUFACTURING METHOD, AND RECORDING MEDIUM WITH SIGNAL PROCESSING PROGRAM

Commissioner for Patents
U.S. Patent and Trademark Office
2011 South Clark Place
Customer Window
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

COPY

Sir:

INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. § 1.97(c)

Pursuant to 37 C.F.R. 1.56 and 1.97(c), Applicants bring to the attention of the Examiner the documents listed on the attached PTO 1449. This Information Disclosure Statement is being filed to the best of the undersigned's knowledge before the mailing date of a Final Office Action or Notice of Allowance on the merits for the above-referenced application. The Commissioner is authorized to charge Deposit Acct. No. 50-0310 in the amount of \$180.00 to cover the fee set forth in § 1.17(p).

Applicants respectfully request that the Examiner consider the listed documents and evidence that consideration by making appropriate notations on the attached PTO Form-1449.

Relevance of the non-English documents can be ascertained from the enclosed English abstract or English translation.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that each or all of the listed documents are material or constitute "prior art." If it should be determined that any of the listed documents do not constitute "prior art" under United States law, Applicants reserve the right to present to the Office the relevant facts and law regarding the appropriate status of such document.

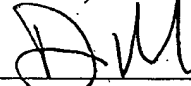
Applicants further reserve the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

Except for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0310. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

COPY

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLP



David B. Hardy

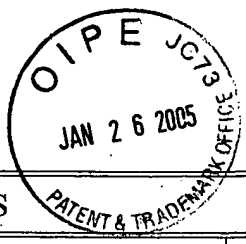
Registration No. 47,362

Dated: October 8, 2004

Customer No. 009629
MORGAN, LEWIS & BOCKIUS LLP
1111 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
(202) 739-3000

BEST AVAILABLE COPY

INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)		Attorney Docket No.: 040808-5108	Application No.: 09/819,977
PTO Form-1449		Applicant(s): Hiroyuki ABE et al.	
		Filing Date: March 29, 2001	PAGE 1 OF 1 Group Art Unit: 2877

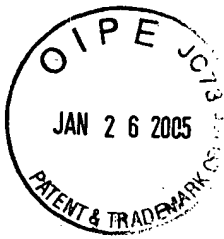


U.S. PATENT DOCUMENTS						
Examiner Initial	Document Number	Date	Name	Class	Sub Class	Filing Date
	6,111,634	August 29, 2000	Pecen et al.	356	72	May 28, 1997

FOREIGN PATENT DOCUMENTS								
	Document Number	Date	Country	Class	Sub Class	Translation		
						Yes	No	
	KR 2000-41422 A	July 15, 1998	Korea			X		

COPY

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
Examiner	Date Considered	
Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication.		



PATENT
ATTORNEY DOCKET NO. 040808-5108

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In re Application of:)	
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Hiroyuki ABE, <i>et al.</i>)	Confirmation No: 4822
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Application No.: 09/819,977)	Group Art Unit: 2877
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Filed: March 29, 2001)	Examiner: P. Connolly
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For: PROCESS END POINT DETECTION)	
APPARATUS AND METHOD, POLISHING)	
APPARATUS, SEMICONDUCTOR DEVICE)	
MANUFACTURING METHOD, AND)	
RECORDING MEDIUM WITH SIGNAL)	
PROCESSING PROGRAM)	

COPY

Commissioner for Patents
U.S. Patent and Trademark Office
2011 South Clark Place
Customer Window,
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

Sir:

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Upon receipt of the Notice of Allowance dated October 7, 2004, Applicants find that the IDS submitted on October 8, 2004 was one day after the mailing of the Notice of Allowance. As such, Applicants respectfully request that IDS previously submitted be considered under 37 C.F.R. § 1.97(d).

Under the provisions of 37 C.F.R. § 1.97(d), the fee of \$180.00 as set forth by § 1.17(p) may be charged to Deposit Account No. 50-0310. In accordance with 37 C.F.R. §§ 1.56, 1.97(d), and 1.97(e), each item of information contained in the IDS was first cited in any

communication from a foreign patent application not more than three months prior to the filing of the IDS on October 8, 2004. Thus, applicants bring again to the attention of the Examiner the documents listed on the attached PTO Form 1449. This Information Disclosure Statement (IDS) is being filed after the events recited in § 1.97(c) but before the payment of the issue fee for the above-identified application. A copy of the IDS, 1449, and cited references previously submitted on October 8, 2004 is enclosed.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that each or all of the listed documents are material or constitute "Prior Art." If it should be determined that any of the listed documents do not constitute "Prior Art" under United States law, Applicants reserve the right to present to the Office the relevant facts and law regarding the appropriate status of such documents.

Applicants further reserve the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

If there is any additional fee due in connection with the filing of this Statement, please charge the fee to our Deposit Account No. 50-0310.

COPY

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLPBy: 

Robert J. Goodell

Registration No. 41,040

Dated: November 8, 2004

CUSTOMER NO. 009629**MORGAN, LEWIS & BOCKIUS LLP**

1111 Pennsylvania Avenue, N.W.

Washington, D.C. 20004

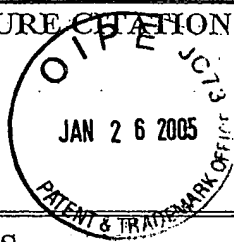
Tel: 202.739.3000

Fax: 202.739.3001

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

PTO Form-1449



Attorney Docket No.:
040808-5108

Application No.:
09/819,977

Applicant(s):
Hiroyuki ABE et al.

PAGE 1 OF 1

Filing Date: March 29, 2001

Group Art Unit: 2877

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Sub Class	Filing Date
	6,111,634	August 29, 2000	Pecen et al.	356	72	May 28, 1997

FOREIGN PATENT DOCUMENTS

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						Yes	No
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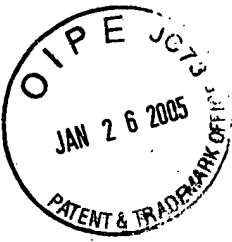
COPY

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Examiner

Date Considered

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication.



PATENT
ATTORNEY DOCKET NO. 040808-5108

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Hiroyuki ABE et al.

Application No.: 09/819,977

Confirmation No.: 4822

Filed: March 29, 2001

Group Art Unit: 2877

Allowed: October 7, 2004

Examiner: P. Connelly

For: PROCESS END POINT DETECTION
APPARATUS AND METHOD, POLISHING
APPARATUS, SEMICONDUCTOR DEVICE
MANUFACTURING METHOD, AND
RECORDING MEDIUM RECORDED WITH
SIGNAL PROCESSING PROGRAM

Commissioner for Patents
MAIL STOP ISSUE FEE

Sir:

REQUEST FOR RETURN COPY OF PTO-1449

No initialed copy has been received of the Form PTO-1449, filed on October 8, 2004 and re-filed November 8, 2004 as shown by the attached copy of our PTO postcard receipts.

Please send a copy, preferably by facsimile, and if any citation is lined through, please be sure to explain why per MPEP 609. Thank you.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLP

By: Robert J. Goodell
Reg. No. 41,040

Dated: December 10, 2004

MORGAN, LEWIS & BOCKIUS LLP
1111 Pennsylvania Ave., N.W.
Washington, D.C. 20004
(202) 739-3000
Fax (202) 739-3001
1-WA/2305167.1

COPY

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: MailMail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
(703) 746-4000or Fax

JAN 26 2005

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

09629

7590

10/07/2004

MORGAN LEWIS & BOCKIUS LLP
1111 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004**COPY**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,977	03/29/2001	Hiroyuki Abe	040808-5108	4822

TITLE OF INVENTION: PROCESS END POINT DETECTION APPARATUS AND METHOD, POLISHING APPARATUS, SEMICONDUCTOR DEVICE MANUFACTURING METHOD, AND RECORDING MEDIUM RECORDED WITH SIGNAL PROCESSING PROGRAM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1370 \$1400	\$300	\$1670 \$1700	01/07/2005
EXAMINER	ART UNIT	CLASS-SUBCLASS			
CONNOLLY, PATRICK J	2877	356-503000			

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

- 1 MORGAN, LEWIS &
- 2 BOCKIUS LLP
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

Nikon Corporation

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Tokyo, Japan

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☒ Advance Order - # of Copies 1

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.

☒ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 50-0310 (enclose an extra copy of this form). Any

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☒ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

deficiencies

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature

Date December 10, 2004Typed or printed name Robert J. GoodellRegistration No. 41,040

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

PTO Form-1449



Attorney Docket No.:
040808-5108

Application No.:
09/819,977

Applicant(s):
Hiroyuki ABE et al.

PAGE 1 OF 1

Filing Date: March 29, 2001

Group Art Unit: 2877

U.S. PATENT DOCUMENT

Examiner Initial	Document Number	Date	Name	Class	Sub Class	Filing Date
	6,111,634	August 29, 2000	<i>Pecen et al.</i>	356	72	May 28, 1997

FOREIGN PATENT DOCUMENTS

	Document Number	Date	Country	Class	Sub Class	Translation	
						Yes	No
	KR 2000-41422 A	July 15, 1998	Korea			X	

COPY

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Examiner

Date Considered

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

PLEASE STAMP AND RETURN TO SHOW RECEIPT OF:

In re Application of: Hiroyuki ABE *et al.*

Confirmation No.: 4822

Application No.: 09/819,977

Group Art Unit: 2877

COPY

Filed: March 29, 2001

Examiner: P. Connelly

For: PROCESS END POINT DETECTION APPARATUS AND METHOD, POLISHING APPARATUS, SEMICONDUCTOR DEVICE MANUFACTURING METHOD, AND RECORDING MEDIUM WITH SIGNAL PROCESSING PROGRAM

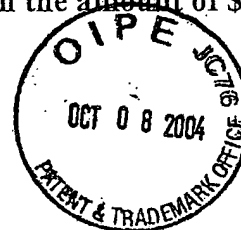
1. Information Disclosure Statement Under 37 C.F.R. § 1.97(c)
2. PTO Form-1449 and two (2) documents as listed

Authorization to Charge Deposit Acct. No. 50-0310 in the amount of \$180.00 for Information Disclosure Statement fee.

Dated: October 8, 2004

Attorney Docket No.: 040808-5108

DHB/SO:dmb



DOCKETED

By *RB* Date *10-10-04*

PLEASE STAMP AND RETURN TO SHOW RECEIPT OF:

In re Application of: Hiroyuki ABE *et al.*

Confirmation No.: 4822

Application No.: 09/819,977

Group Art Unit: 2877

Filed: March 29, 2001

Examiner: P. Connelly

For: PROCESS END POINT DETECTION APPARATUS AND METHOD, POLISHING APPARATUS, SEMICONDUCTOR DEVICE MANUFACTURING METHOD, AND RECORDING MEDIUM WITH SIGNAL PROCESSING PROGRAM

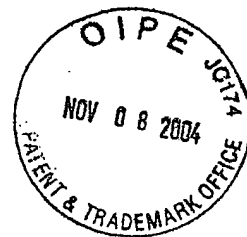
1. Information Disclosure Statement Under 37 C.F.R. § 1.97(d)
2. Copy of IDS, PTO Form-1449 and two (2) listed documents previously filed on October 8, 2004
3. Copy of post card evidencing the IDS filing date of October 8, 2004

Dated: November 8, 2004

Attorney Docket No.: 040808-5108

RJG2/SO

COPY



DOCKETED
By *SL* Date *11/08/04*

PLEASE STAMP AND RETURN TO SHOW RECEIPT OF:

U.S. Patent Application of: Hiroyuki ABE et al.
Application No. 09/819,977
Filed: March 29, 2001

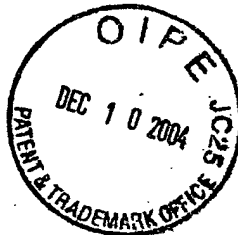
COPY

For: PROCESS END POINT DETECTION APPARATUS AND METHOD,
POLISHING APPARATUS, SEMICONDUCTOR DEVICE
MANUFACTURING METHOD, AND RECORDING MEDIUM
RECORDED WITH SIGNAL PROCESING PROGRAM

MAIL STOP ISSUE FEE

1. Please charge Deposit Account #50-0310 in the amount of \$1703.00 (\$1400.00 for Issue Fee, \$300 for Publication Fee and \$3.00 for Patent Copy)
2. Issue Fee Transmittal PTOL-85B (2 copies)
3. Copy of Request for Return Copy of PTO-1449
4. Copy of Date-Stamped Postcards dated October 8, 2004 and November 8, 2004
5. Copy of PTO-1449 filed on October 8, 2004 and November 8, 2004 and Korean reference cited thereon

Dated: December 10, 2004
Attorney Docket No.: 040808-5108
RG2/lmp



DOCKETED

By BR Date 12/13/04

BEST AVAILABLE COPY

출력 일자: 2004/8/2

발송번호 : 9-5-2004-031027609
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특허청 의견제출통지서

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출원번호 10-2002-7012936

발명의 명칭

공정 종말점 검출 장치와 방법, 연마 장치, 반도체 장치의제조 방법,
및 신호 처리 프로그램이 기록된 기록 매체

이 출원에 대한 심사결과 아래와 같은 거절이유가 있어 특허법 제63조의 규정에 의하여 이를 불지하
오니 의견이 있거나 보정이 필요할 경우에는 상기 제출기일까지 의견서[특허법시행규칙 별지 제25
호의2서식] 또는/및 보정서[특허법시행규칙 별지 제5호서식]를 제출하여 주시기 바랍니다.(상기 제
출기일에 대하여 매회 1월 단위로 연장을 신청할 수 있으며, 이 신청에 대하여 별도의 기간연장승인
통지는 하지 않습니다.)

[이유]

이 출원의 특허청구범위 제1항, 제12항에 기재된 발명은 그 출원전에 이 발명이 속하는 기술분야에
서 통상의 지식을 가진 자가 아래에 지적한 것에 의하여 공이하게 발명할 수 있는 것이므로 특허법
제29조제2항의 규정에 의하여 특허를 받을 수 없습니다.

[아래]

본원 발명의 청구범위 제1항, 제12항에는 집적회로 등의 반도체 장치를 제조하는 공정에서, 반도체
웨이퍼 상에 층을 형성하는 공정 또는 연마 공정과 같이 웨이퍼 상의 층을 제거하는 공정에서 공정
종말점을 검출하는 검출장치 및 검출 방법에 관한 것이지만, 한국공개특허공보2000-0041422호
(2000.07.15.인용예1)에는 화학적 기계적 연마에 의한 평탄화가 진행됨에 따라 표면의 거칠기가 완
화되어 검출되는 빛의 세기가 증가하다가 연마 종말점 이상으로 연마가 진행될 때에는 표면 거칠기
의 변화가 없어 빛의 세기가 일정해지는 것을 이용하여 연마 종말점을 검출하는 방법 및 그를 이용
한 화학적 기계적 연마 장치에 관한 것이 개시되어 있고, 한국공개특허공보1998-087551호
(1998.12.05.인용예2)에는 연마공구와 필름두께 모니터를 사용하여 기판을 화학적 기계적 연마(CMP)
하는 동안 다중-파장 분광계를 사용하여 두께를 현장에서 모니터링하는 방법 및 장치에 관한 것이 개
시되어 있으므로, 상기한 청구항은 통상의 지식을 가진자가 인용예1 및 인용예2에 의하여 용이하게
발명할 수 있는 것으로 판단됩니다.

[참 부]

첨부 1 한국공개특허공보 2000-41422호(2000.07.15) 1부.
첨부 2 한국공개특허공보 1998-87551호(1998.12.05) 1부. 끝.



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심사관 김교홍



<<안내>>

문의사항이 있으시면 ☎ 042)481-8136 로 문의하시기 바랍니다.

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▶ 홈페이지(www.kipo.go.kr)내 부조리신고센터

(19) KOREAN PATENT OFFICE (KR)
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 (71) APPLICANT: HYUNDAI ELECTRONICS IND
 (72) INVENTOR: PARK HYEONG SUN (KR)

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10 Examination has been requested.

(54) [TITLE OF INVENTION]: DETECTION METHOD OF POLISH ENDING POINT AND CHEMICAL
 MECHANICAL POLISHING APPARATUS USING THE SAME

15 ABSTRACT

Dispensing with the preliminaries:

20 Figs. 1a and 1b are schematic drawings showing principles of a detection
 method of polish ending point of a chemical mechanical polishing according
 to the present invention. Fig. 1a shows a state that, before polishing, an
 incident light (12) with a given wave length illuminating a rough surface of
 a layer to be polished (11) formed on a wafer (10) is reflected diffusely on
 25 the rough surface, so that detected light with the given wave length detected
 by a detector 20 is not strong. On the other hand, Fig. 1b shows a state that,
 after completion of polishing, the layer to be polished (11) has become smooth
 hardly producing diffused reflection, so that detected light with the given
 wave length detected by the detector 20 is relatively strong.

30 In this manner, reflection of a light becomes different in accordance with
 diffused reflection caused by the roughness of the surface to be polished.
 Accordingly, the rougher the surface of the layer to be polished becomes, the
 more diffused reflection produces, so that the light intensity detected by
 a detector fixed to a position becomes small. On the contrary, when the surface
 35 of the layer to be polished becomes smooth, the light intensity detected under
 the same condition becomes large.

Fig. 2 is a graph showing variation in relative light intensity upon polishing.
 The surface becomes smooth upon progress in polishing, so that detected light
 intensity increases. When the polishing exceeds the polish ending point, surface
 40 roughness does not change, so that light intensity becomes constant.

Accordingly, while detecting light intensity upon progress in CMP process,
 an inflection point where the detected light intensity becomes constant can
 be recognized as a polish ending point.

45 As shown in Fig. 3, an example of a chemical mechanical polishing apparatus
 according to the present invention includes a polishing table (32), a polishing
 table holder (31) for holding the polishing table (32), a wafer holder (33)
 that is connected to a rear side of a wafer (10) with an end thereof to rotate
 the wafer driven by a motor (90); a light source (40) for illuminating a layer
 to be polished formed on a front surface of the wafer (10), a detector (20)
 50 for detecting a light reflected from the layer to be polished incident from
 the light source (40), an amplifier (50) that is connected to an output terminal

of the detector (20) through an input terminal thereof and amplifies a signal input from the detector (20), an analyzer (60) that is connected to an output terminal of the amplifier (50) with an input terminal thereof and to a feedback system (80) with a first output terminal thereof and to a monitor (70) with a second output terminal thereof, the feedback system (80) that is connected to the analyzer (60) with an input terminal thereof and to the motor (90) with an output terminal thereof and stops the polishing apparatus at the ending point, the monitor (70) that is connected to the analyzer (60) and displays information, and the motor (90) that rotates the wafer holder (33) by electric power applied in response to a signal from the feedback system (80). In Fig. 3, a reference number 34 denotes slurry.

Fig. 4 is a drawing explaining positional relation between the wafer (10) and the polishing table (32) of the polishing apparatus shown in Fig. 3. A reference symbol 10C denotes the center of the wafer (10), 32C denotes the center of the polishing table (32). As shown in Fig. 4, during progress in polishing, a portion of the periphery of the layer to be polished formed on the wafer (10) is exposed with rotating on the periphery of the polishing table (32). In order to keep the polishing amount constant in spite of exposing a portion of the periphery of the wafer, the wafer table (32) and the wafer (10) are rotated simultaneously. In this case, a motor (not shown) for rotating the polishing table holder (31) is equipped.

In this manner, during progress in polishing, periphery of the layer to be polished is exposed outside of periphery of the polishing table (32) with rotating, a light with the wave length from 5000Å to 8000Å from the light source (40) illuminates the periphery of the exposed layer to be polished, a light reflected from the layer to be polished is detected by the detector (20), the detected signal is amplified by the amplifier (50), the amplified signal is analyzed by the analyzer (60), and when the polish ending point is recognized, a signal is applied to the feedback system (80) to stop polishing. On the other hand, when the analyzer (60) has recognized the polish ending point, polishing may be stop manually without the feedback system (80).

Omit the rest.

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